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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/981,389	10/17/2001	David Graumann	1020.P12451	6813
57035 7590 KACVINSKY LLC C/O INTELLEVATE P.O. BOX 52050 MINNEAPOLIS, MN 55402			EXAMINER FAULK, DEVONA E	
			ART UNIT 2615	PAPER NUMBER
			MAIL DATE 09/13/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/981,389	Applicant(s) GRAUMANN, DAVID	
	Examiner Devona E. Faulk	Art Unit 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-7,9-16 and 18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-7,9-16 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed 6/12/2007, with respect to the rejection(s) of claim(s) 1-16 and 18 under 103(a) , regarding the amended claim language of the multiple reflectors, have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of KSR rationale of obvious to try.
2. Claims 2,8,14,17 and 19-26 are cancelled.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1,3-5,7,9-10,12,13,15,16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuo (US 6,600,824) in view of Birchfield et al. (U.S. Patent Application 2002/0097885) in further view of Weinberger (US 1,897,222).

Regarding **claim 1**, Matsuo discloses an acoustic source localization system and method comprising:

a first microphone (10a, Figure 12; column 16, lines 39-54) located at a first location to detect acoustic waves at the first location;

a second microphone (10b; Figure 12; column 16, lines 39-54) located at a second location to detect the acoustic waves at the second location;

an acoustic analysis device to detect and analyze acoustic waves (11, sound signal estimation part, Figure 12; column 9, lines 55-60; column 16, lines 39-54);

a processing device to determine a spatial location of a source of the acoustic waves (50, Figure 12; column 15, lines 45-58; column 16, lines 50-54) and

in response to the spatial location of the source to at least one of delay an output of the first or second microphone or selectively disable the first or second microphone (column 16, lines 63-column 17, line 9).

Matsuo discloses a teleconferencing environment (column 1, lines 28-31). Teleconferencing is the live exchange of information among persons and machines supported by providing audio, video and data services. It is implicit therefore, that humans would be present.

Matsuo fails to explicitly teach of multiple reflective surfaces to reflect acoustic waves and using the Generalized Cross Correlation Phase Transform.

Burchfield discloses an acoustic source localization system applicable to audio-visual applications and using the Generalized Cross Correlation Phase Transform (page 3, paragraph 0040).

Burchfield teaches that in some applications it is desirable to determine the direction of a human speaker (page 3, paragraph 0038). A human has ears, and the ears read on reflective surfaces having an irregular shape.

It would have been obvious to modify Matsuo to have the human ears be the acoustically reflective surfaces in order to better determine the position of an individual who is talking and to use the Generalized Cross Correlation Phase Transform to determine a location of a source because the transform has been proven to work in determining the location of an audio source. .

Matsuo as modified by Birchfield discloses reflecting. Matsuo as modified by Birchfield fails to disclose explicitly reflecting the acoustic waves in a direction of the first microphone and the second microphone. Weinberger discloses a reflector that reflector acoustic waves in a direction of a first microphone and a second microphone (Figure 1; the reflector has an irregular shape that implicitly provides additional phase variation).

It would have been obvious to modify Matsuo as modified by Birchfield by using a the reflector that reflects acoustic waves in a direction of the first microphone and the second microphone as taught by Weinberger so that the microphones will be pick up a total sound that is undiminished regardless of the location of the sound source.

Matsuo as modified by Burchfield and Weinberger discloses a reflector that is structured to reflect the acoustic waves in a direction of a first and second microphones.

Matsuo as modified by Burchfield and Weinberger fails to teach of **multiple** reflectors structured to reflect the acoustic waves in a direction of the first and second microphones. At the time of the invention using reflectors of some type to detect the location of an acoustic source was known in the art. Matsuo as modified discloses a sound location system having at least one reflector that reflects the acoustic waves in a direction of a first and second microphone. It would have been obvious to one of

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ordinary skill in the art at the time of the invention to try and implement the system using two reflectors with a reasonable expectation of success.

Regarding **claim 3**, Matsuo as modified by Birchfield and Weinberger teaches that in some applications it is desirable to determine the direction of a human speaker (Birchfield, paragraph 0038). A human has ears, and the ears read on at least one acoustically reflective surface shaped like a human pinnea. Therefore, all elements of claim 3 are comprehended by the rejection of claim 1.

Regarding **claim 4**, Matsuo as modified by Birchfield and Weinberger teaches that in some applications it is desirable to determine the direction of a human speaker (Birchfield, paragraph 0038). A human has ears, and the ears read on at least one acoustically reflective surface having low acoustic absorption properties. Therefore, all elements of claim 4 are comprehended by the rejection of claim 1.

Regarding **claim 5**, Matsuo as modified Birchfield and Weinberger discloses a processing device that directs an observation device to the spatial location of the source of the acoustic waves (Birchfield, paragraph 0072).

Claims 7 and 12 share common features

Regarding **claim 7 and 12**, Matsuo discloses a method of determining a spatial location of a source of acoustic waves (and a sound location device, Figure 12; method is implicit in functionality of system), comprising:

Detecting, with a first microphone (10a, Figure 12; column 16, lines 39-54) acoustic waves at a first location;

Detecting, with a second microphone (10b, Figure 12; column 16, lines 39-54) acoustic waves at a second location;

analyzing the acoustic waves (11, sound signal estimation part, Figure 12; column 9, lines 55-60; column 16, lines 39-54);

determining a spatial location of a source of the acoustic waves (50, Figure 12; column 15, lines 45-58; column 16, lines 50-54), and in response to the spatial location of the source, at least one of delaying an output of the first or second microphone, or selectively disabling the first or second microphone (column 16, lines 63-column 17, line 9).

Matsuo discloses a teleconferencing environment (column 1, lines 28-31). Teleconferencing is the live exchange of information among persons and machines supported by providing audio, video and data services. It is implicit therefore, that humans would be present.

Matsuo fails to explicitly teach of at least one acoustically reflective surface to reflect acoustic waves.

Burchfield discloses an acoustic source localization system applicable to audio-visual applications and using the Generalized Cross Correlation Phase Transform (page 3, paragraph 0040).

Burchfield teaches that in some applications it is desirable to determine the direction of a human speaker (page 3, paragraph 0038). A human has ears, and the ears read on reflective surfaces having an irregular shape.

It would have been obvious to modify Matsuo to have the human ear be the acoustically reflective surface in order to better determine the position of an individual who is talking.

The method is inherent in the functionality of the system.

Matsuo as modified by Birchfield discloses reflecting. Matsuo as modified by Birchfield fails to disclose explicitly reflecting the acoustic waves in a direction of the first microphone and the second microphone. Weinberger discloses a reflector that reflector acoustic waves in a direction of a first microphone and a second microphone (Figure 1).

It would have been obvious to modify Matsuo as modified by Birch filed by using a the reflector that reflects acoustic waves in a direction of the first microphone and the second microphone as taught by Weinberger so that the microphones will be pick up a total sound that is undiminished regardless of the location of the sound source.

Matsuo as modified by Burchfield and Weinberger discloses a reflector that is structured to reflect the acoustic waves in a direction of a first and second microphones.

Matsuo as modified by Burchfield and Weinberger fails to teach of **multiple** reflectors structured to reflect the acoustic waves in a direction of the first and second microphones. At the time of the invention using reflectors of some type to detect the location of an acoustic source was known in the art. Matsuo as modified discloses a sound location system having at least one reflector that reflects the acoustic waves in a direction of a first and second microphone. It would have been obvious to one of ordinary skill in the art at the time of the invention to try and implement the system using two reflectors with a reasonable expectation of success.

Regarding **claim 12**, Matsuo as modified by Birchfield and Weinberger r discloses a computer-readable medium (Birchfield, RAM; paragraph 0037) and a computer-readable program code, stored on the computer-readable medium (Birchfield, paragraph 0037) having instructions to execute the localization. It would have been obvious to modify Matsuo by storing a program code on a computer readable medium with instruction to execute the localization in order to provide a more efficient method and device.

Regarding **claim 9**, Matsuo as modified by Birchfield and Weinberger teaches that in some applications it is desirable to determine the direction of a human speaker (Birchfield, paragraph 0038). A human has ears, and the ears read on at least one acoustically reflective surface having low acoustic absorption properties. Therefore, all elements of claim 4 are comprehended by the rejection of claim 7.

Regarding **claim 10**, Matsuo as modified by Birchfield and Weinberger discloses directing an observation device to the determined spatial location of the source of the acoustic waves (Birchfield, paragraph 0072).

Regarding **claim 13**, Matsuo as modified Birchfield and Weinberger teaches that in some applications it is desirable to determine the direction of a human speaker (Birchfield, paragraph 0038). A human has ears, and the ears read on wherein at least one acoustically reflective surface is utilized to reflect the acoustic waves. Therefore, all elements of claim 13 are comprehended by the rejection of claim 12.

Regarding **claim 15**, Matsuo as modified by Birchfield and Weinberger teaches that in some applications it is desirable to determine the direction of a human speaker (Birchfield, paragraph 0038). A human has ears, and the ears read on wherein at least one acoustically reflective surface has low acoustic absorption properties. Therefore, all elements of claim 4 are comprehended by the rejection of claim 13.

Regarding **claim 16**, Matsuo as modified by Birchfield and Weinberger discloses wherein the computer-readable program code includes instructions to direct an observation device to the determined spatial location of the source of the acoustic waves (Birchfield, paragraph 0037; paragraph 0072).

5. **Claims 6,11 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuo (US 6,660,824) as applied above to claims 1,7 and 12 above and Birchfield et al. (U.S. Patent Application 2002/0097885) as applied above to claims 1,7 and 12 and Weinberger (US 1,897,222) as applied above to claims 1,7 and 12 in view of Nordstrom et al. (US 5,058,419).

Regarding **Claim 6,11 and 18** Matsuo as modified by Birchfield and Weinberger fail to disclose but Nordstrom teaches of further including a calibration device to create a set of phase signature tables associating phase angles, between when the acoustic waves reach the first microphone and when the acoustic waves reach the second microphone, with detected frequencies at a predetermine spatial location (Figure 5; column 3, lines 16-32). Birchfield discloses computing phase angles corresponding to microphone position (paragraph 0058). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Matsuo as modified

Birchfield by creating a phase table as claimed in order to calculate the location of the sound source using the most frequently occurring data (Nordstrom, column 2, lines 38-40.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devona E. Faulk whose telephone number is 571-272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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